

REMARKS

Claims 1 - 30 are pending. Claims 1, 4, 5, 6, 11 - 13, 15, 16, 19 - 21, and 23 - 30 have been amended. No new matter has been added. Reexamination and reconsideration of this application are respectfully requested.

In the April 11, 2005 Office Action, the Examiner rejected claims 1 - 30 under 35 U.S.C. § 112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. The Examiner states that the recitation of "subtracting the emulated advancement time from the motor speed to generate a commutation countdown time" is an error mathematically. (*Office Action, page 2*). The applicants understand the Examiner's rejection and have amended the claims to address the Examiner's rejection by making the units the same for the terms in the limitations. The applicants would like to point out to the Examiner that many practitioners in the art of cooling fans and motor control refer to a motor speed as how long it takes for a fan to make one revolution of a rotor of a fan (i.e., 360 degrees from a reference point). Based on the applicants' amendments, the applicants respectfully request that the rejection of claims 1 - 30 for being indefinite be withdrawn.

The Examiner also rejected claims 4 and 5 for antecedent basis issues. The applicants have amended claims 4 and 5 to address the Examiner's rejection.

The Examiner rejected claims 25 - 30 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement because the application does not disclose a computer program code. (*Office Action, pages 4 - 5*). The applicants respectfully disagree with the Examiner because claims which are submitted with the originally filed patent application provide their own support and thus because the claims

as filed specified a program code, the application does provide support for computer program code. Further, the application as filed does disclose a computer program code. Specifically, page 9, lines 6 - 7, the application discloses that the microcontroller includes a program memory into which program code is stored. Further, on page 10, lines 19 - 21, the specification recites "software code in the microcontroller 120 predicts when the drive signals should be activated, switched, or commutated. In other words, software code may emulate the position of the speed sensor and also compensate for the advancement in position of the speed sensor." Accordingly, applicants respectfully request that the Examiner's rejections of claims 25 - 30 under 35 U.S.C. § 112, first paragraph be withdrawn.

The Examiner rejected claims 1, 6, 11, 13, 16, 25, and 28 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,298,839 to Takeda ("the Takeda reference"). The Examiner stated that since the claimed limitations are unsearchable due to the rejection under 35 U.S.C. § 112, second paragraph, no indication of allowable subject matter is given in this office action. The Examiner further stated that he is pretty much sure that claims 1, 6, 11, 13, 16, 25, and 28 are not allowable in view of Takeda's teachings. These rejections are respectfully traversed in so far as it is applicable to the presently pending claims.

Independent claim 1 distinguishes over the cited reference. Claim 1, as amended, recites:

A method of driving a motor, comprising:
calculating an emulated advancement time based on the motor's efficiency;
measuring a time for one revolution of a rotor;
subtracting the emulated advancement time from the time for the one revolution of the rotor to generate a commutation countdown time; and

commutating outputs from a controller to the motor when the commutation countdown time has elapsed.

Independent claim 1, as amended, overcomes the Examiner's 35 U.S.C. § 112, second paragraph reference. Support for the amendment to claim 1 can be found on page 20, lines 14 - 19 of the application. As is well known in the art, while a motor speed may be expressed in revolutions per minute, a fan or motor speed may also be calculated for a single revolution, a $\frac{1}{2}$ of a revolution, or $\frac{1}{3}$ of a revolution. In this case, the fan or motor speed would be expressed in seconds because it is the time that elapses for a complete revolution of the rotor, and therefore the fan or motor. For example, a fan or motor revolving at 1200 revolutions per minute takes .05 of a second to make a complete rotation. Claim 1 has been amended to reflect this terminology.

The Takeda reference does not disclose, teach, or suggest the method of claim 1, as amended. The Examiner states that Fig. 4 illustrates a driving signal generation unit 25 for generating a communication countdown time based on the motor speed and the advanced time. (*Office Action, page 6*). The Examiner also states that Fig. 9B, step 13 illustrates that a variable is when a count is not zero, then the count is decremented. (*Office Action, page 6*). The Takeda reference does not disclose a method of driving a motor including **subtracting the emulated advancement time from a time for the one revolution of the rotor to generate a commutation countdown time**. The Takeda reference only discloses that a driving signal generation unit 25 generates the motor driving signal based on the electrical angle signal but does not mention or disclose that the **emulated advancement time is subtracted from the time for one revolution of the rotor to generate a communication countdown time**, as is recited in claim 1.

Further, the Takeda reference does not disclose a method of driving a motor including **commutating outputs from a controller to the motor when the commutation countdown time has elapsed**. There is no disclosure in the Takeda reference of when the outputs are commutated and specifically there is no disclosure that the **outputs are commutated when the commutation countdown time has elapsed**. Accordingly, applicants respectfully submit that claim 1, as amended, distinguishes over the Takeda reference.

Independent claim 25, as amended, recites limitations similar to claim 1, as amended. Accordingly, applicants respectfully submit that claim 25, as amended, distinguishes over the Takeda reference for reasons similar to those discussed above in regard to claim 1, as amended.

Claims 2 - 5 and 26 - 27 depend, indirectly or directly, on claims 1 and 25, respectively, both as amended. Accordingly, applicants respectfully submit that claims 2 - 5 and 26 - 27 distinguish over the Takeda reference for the same reasons as those discussed above in regard to claim 1, as amended.

Claims 2 and 3 further distinguish over the Takeda reference.

Claim 2 recites:

The method of claim 1, further including **measuring an actual advance time, the actual advance time being a time between the commutating of the outputs and a receipt by the controller of a next speed sensor interrupt**.

Claim 3 recites:

The method of claim 2, further including **calculating an anticipated motor speed by adding the actual advance time to the commutation countdown time**.

There is no disclosure in the Takeda reference of the **measuring of an actual**

advance time, which is the time between the commutating of outputs and the receipt by the controller of a next speed sensor interrupt. Nor is there disclosure of the adding of the actual advance time to the commutation countdown time to create an anticipated motor speed, as is recited in claim 3. The applicants understand that the anticipated motor speed is normally expressed in revolutions per second, but the applicants have also defined the term as the addition of two times. Accordingly, applicants respectfully submit that claims 2 and 3 further distinguish over the Takeda reference.

Independent Claim 6 distinguishes over the Takeda reference. Claim 6, as amended, recites:

A method of initializing neutral commutation, comprising:
initializing a first driving signal to drive a motor;
receiving a tachometer signal from a speed sensor for the motor;
**measuring a pulse time based on the received tachometer
signal;**
**calculating a commutation countdown value by subtracting an
initial advancing time from the pulse time if the calculated motor
speed is lower than a minimum pre-determined threshold; and**
**commutating outputs to the motor including generating a
second driving signal if the commutation countdown value has
elapsed.**

The amendments made to claim 6 are supported by the specification on page 13, lines 17 - 22, page 10, lines 7 - 16, and page 20, lines 1 - 4. The Takeda reference does not disclose any of the above highlighted limitations of claim 6, as amended. There is no disclosure of the **measuring of a pulse time, calculating the commutation countdown value by subtracting an initial advancing time from the pulse time, or that the outputs are commutated if the commutation countdown value has elapsed.** Accordingly, applicants respectfully submit that claims 6, as

amended, distinguishes over the Takeda reference.

Claims 7 - 10 depend, indirectly or directly, on claim 6, as amended.

Accordingly, applicants respectfully submit that claims 7 - 10 distinguish over the Takeda reference for the same reasons as those discussed above in regard to claim 6, as amended.

Independent claim 11 distinguishes over the Takeda reference. Independent claim 11, as amended, recites:

A method of emulating advancement of a speed sensor, comprising:
calculating an advancement time based on a motor's efficiency;
utilizing a tachometer signal transmitted from a speed sensor for the motor to measure a time between pulses of the tachometer signal;
subtracting the advancement time from the time between pulses to generate a commutation countdown time; and
commutating outputs from a controller to the motor when the commutation countdown time has elapsed.

The support for the amendments to claim 11 is found in the specification on page 13, lines 17 - 22, page 10, lines 7 - 16, and page 20, lines 1 - 4. The Takeda reference does not disclose the **measuring of a time between pulses of a tachometer signal, subtracting the advancement time between pulses to generate a commutations countdown time, and commutating outputs when the commutation countdown time has elapsed.** Accordingly, applicant respectfully submit that claim 11, as amended, distinguishes over the Takeda reference.

Independent claims 13, 16, 21, and 28 recite limitations similar to claim 11, as amended. Accordingly, applicants respectfully submit that independent claims 13, 16, 21, and 28 distinguish over the Takeda reference for reasons similar to those discussed above in regard to independent claim 11, as amended.

Claims 12, 14 - 15, 17 - 20, 22 - 24, and 29 - 30 depend, indirectly or directly, from claims 11, 13, 16, 21, and 28, respectively. Accordingly, applicants respectfully submit that claims 12, 14 - 15, 17 - 20, 22 - 24, and 29 - 30 distinguish over the Takeda reference for the same reasons as those discussed above in regard to claim 11.

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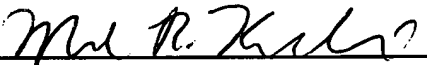
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Applicants believe that the foregoing amendments place the application in condition for allowance, and a favorable action is respectfully requested. If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call either of the undersigned attorneys at the Los Angeles telephone number (213) 488-7100 to discuss the steps necessary for placing the application in condition for allowance should the Examiner believe that such a telephone conference would advance prosecution of the application.

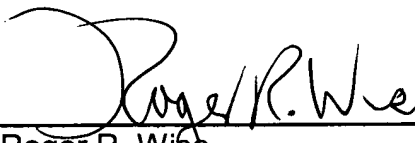
Respectfully submitted,

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